

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A secondary electron detector, especially in a scanning electron microscope, comprising:

a detector chamber adapted to be coupled with a vacuum pump to produce a vacuum inside the detector chamber, the detector chamber comprising an interior and a plurality of walls separating the interior from a surrounding environment;

at least one source of bias voltage; and

a sensor located in said detector chamber and having an active surface,

wherein one of said walls of said detector chamber is near to the active surface of the sensor and is closed by an electrically conductive grid, said electrically conductive grid including a plurality of orifices having a high resistance to a transmission of gas and a low resistance to a transmission of electrons, said electrically conductive grid connected with the at least one source of bias voltage, said orifices defining electron microlenses inside and in front of said orifices, said electron microlenses being created by an electrical field protruding through said orifices, said electrical field originating from a conductive coating inside of the detector chamber, and the conductive coating adapted to be connected to a voltage source.

2. (Previously Presented) The secondary electron detector of claim 1, wherein the electrically conductive grid is made of copper.

3. (Currently Amended) The secondary electron detector of claim 1, wherein the electrically conductive grid is constituted by a diaphragm made of electrically insulating material and provided with said orifices, the diaphragm including a first side near to the sensor, a first conductive coating on the first side, a second side opposite to the first side, and a second conductive coating applied to the second side, the first conductive coating being electrically insulated from the second conductive coating.
4. (Previously Presented) The secondary electron detector of claim 3, wherein the diaphragm is a polyimide diaphragm.
5. (Previously Presented) The secondary electron detector of claim 1, wherein the source of bias voltage is a source of bias of 50 V to 2000 V.
6. (Previously Presented) The secondary electron detector of claim 5, wherein the source of bias voltage is a source of bias voltage of 250 V to 700 V.
7. (Previously Presented) The secondary electron detector of claim 1, wherein the sensor comprises a light-guide having an input and an output, and further comprising an ionization grid arranged between the input of the light-guide and the electrically conductive grid, the ionization grid adapted to be connected to a source of ionization voltage, and the output of the light-guide adapted to lead to a photo-multiplier input.
8. (Currently Amended) The secondary electron detector of claim 7, wherein the input of the light-guide is coupled with a scintillator, the scintillator including a surface near to the electrically conductive grid, and the surface of the scintillator having a conductive coating adapted to be connected with a high voltage source.
9. (Previously Presented) The secondary electron detector of claim 1, wherein the sensor comprises a PIN diode.
10. (Cancelled)

11. (Previously Presented) The secondary electron detector of claim 1, wherein the electrically conductive grid is covered outside the detector chamber with an input screen, the input screen adapted to be connected to a low voltage source of 50 V to 500 V.

12. (Currently Amended) The secondary electron detector of claim 1, wherein the electrically conductive grid is covered outside of the detector chamber [(3)] with an input screen, the input screen adapted to be connected to a low voltage source of 80 V to 150 V.

13. (Previously Presented) The secondary electron detector of claim 11, wherein the input screen is of hemispherical shape.

14. (Previously Presented) The secondary electron detector of claim 12, wherein the input screen is of hemispherical shape.